Document 00910

ADDENDUM NO. __1___

Date of Addendum: _____

PROJECT NAME: FY2013 Storm Water Pump Station and Flood Warning System Improvements

PROJECT NO: WBS No. M-430241-0009-4
BID DATE: April 16, 2015

FROM: Ravi Kaleyatodi, P.E., CPM
Senior Assistant Director

City of Houston, Department of Public Works and Engineering
Houston, Texas 77002
Attn: *Maher H. Saied, Sr. Project Manager*, Project Manager

TO: Prospective Bidders

This Addendum forms a part of the Bidding Documents and will be incorporated into the Contract documents, as applicable. Insofar as the original Project Manual and Drawings are inconsistent, this Addendum governs.

This Addendum uses the change page method: remove and replace or add pages, or Drawing sheets, as directed in the change instructions below. Change bars (|) are provided in the outside margins of pages from the Project Manual to indicate where changes have been made; no change bars are provided in added Sections. Reissued Drawing Sheets show the Addendum number below the title block and changes in the Drawing are noted by a revision mark and enclosed in a revision cloud.

CHANGES TO PROJECT MANUAL

BIDDING REQUIREMENTS

Document 00010 – Table of Contents. Remove this document in its entirety and replace with the attached revised Document 00010.

Document 00450 – Bidder's Statement of MWBE/PDBE/DBE/SBE Status. Remove this document in its entirety and replace with the attached revised Document 00450.

Document 00520 – Agreement. Remove this document in its entirety and replace with the attached revised Document 00520.

Document 00604 – History of OSHA Actions and List of On-The-Job Injuries. Document was added with attached.

SPECIFICATIONS

Specification Section 01110 – Summary of Work. Remove this document in its entirety and replace with the attached revised Section 01110.

Specification Section 16441 – Switchboards is added.

CONTRACTOR QUESTIONS AND CLARIFICATIONS

1. Please clarify that the explosion proof rating will NOT be required on the submersible mixed flow stormwater pumps. This is not usually a requirement in typical stormwater applications.

   Answer: Explosion proof stormwater pumps will not be required. Specification 11311 Submersible Wastewater Pumps Section 2.02 C 2 will be considered as not applicable as will reference to explosion proof in the drawings.

2. Note 1 on sheet M-01 states the hatch and column are to be painted forest green per spec 05500. Does the entire column need to be painted or just the part above ground?

   Answer: The entire column should be painted inside and outside the station including both the horizontal and vertical sections.

3. We previously submitted a question in regards to the submersible propeller pumps. There seems to be some discussion about this issue and we want to clarify that our manufacturer believes that this revolves around the area classification in which the pumps will be operating. If the environment area classification does not contain combustibles and does not require explosion proof equipment, it seems to reason this is a wasted expense. It would be a more expensive pump up front and more expensive to maintain for an area classification that doesn't require it. Additionally, there are various explosion proof classifications. Please confirm the area classification for the discussed/subject pump station.

   Answer: Explosion proof stormwater pumps will not be required. Specification 11311 Submersible Wastewater Pumps Section 2.02 C 2 will be considered as not applicable as will reference to explosion proof in the drawings.

4. Please note the specified ac unit does not have the smoke detector option requested, also the unit depth is greater and will protrude further than shown. This will make the burglar bars bigger. Please see attached sheet. Also is 5

ton really necessary for this size building?

Answer: Please provide smoke detector option. Size burglar bars as required. Yes, 5 ton is necessary.

5. There is only GFI in the building and shows to be behind the VFD is this correct

   Answer: There is only one GFI. Relocate it from behind the VFD to an accessible location in building.

6. Item #52 shows $100,000 for extra credits, what is this for if all the programming is included in the electrical line item.

   Answer: Programming is to be considered a separate pay item under item 52 in the bid form.

7. Section 16060-4D States that testing needs to be done. What tests are required?

   Answer: The testing referenced involves retro-fitting the existing plant WiMax installation with new WiMax and associated equipment delineated in Note #10, drawing E-01 to ensure new system functions properly with regard to control/operation of existing & new plant equipment. This new WiMax system shall operate the plant via radio signal control & is to be installed during this project. Also, refer to specification section 16060-3 item 3.05A & 02220-6.

8. Where is the spec section for switchboards?

   Answer: While the salient characteristics are defined on drawing E-02, Specification Section 16441 is added by addendum.

9. The first spec section states to use SCH 80 PVC the second spec section states to SCH 40. Which of these do we use for the underground.

   Answer: Use schedule 40 PVC as it shall be embedded in a concrete duct bank.

10. The first spec section says to use PVC coated rigid metal conduit for elbows, the second spec section says to use fiberglass elbows. Which one do we use?

    Answer: The fiberglass elbows shall be used, as per discussions with plant during design.

11. The manhole detail shows brass hardware, is this correct?

Answer: Use bronze hardware (not brass) as noted in detail No. 2, top plan on drawing E-09.

12. The notes for the generator plug is not clear.
E-11 Note 3: Mentions a drawing where is this drawing?

Answer: There is no generator plug. Wiring terminates at fused disconnect switch see E-02. On drawing E-11 Note 3, delete reference “as shown on drawing.”

13. E-3 shows using Aluminum on the service conductors, is this correct?

Answer: Use aluminum cable for the service conductors as noted on drawing, E-03 Cable 100.

14. On the 1000A Main breaker it shows using brass mechanical lugs, is this correct?

Answer: Brass mechanical lugs are shown for the utility svc fused disconnect switch & not for the 1000 Amp Main Breaker. Use standard lugs suitable for the application in lieu of the brass lugs.

15. Note 8 on drawing E-02 states that a fault current calculation needs to be done, does this need to be done by a third party testing company or done by the engineer of record?

Answer: The fault current shall be calculated at the service entrance “Main Distribution Panel.” The contractor is responsible to have the fault current calculation performed. This is required as the utility has not chosen the pad-mounted transformer KVA rating and as such it is not known what KVA rating they will choose. Contractor to coordinate with utility.

16. The AC units do not show any service disconnects, is this correct?

Answer: No. The intent is to have the AC unit manufacturer supply & install integral service disconnect switches mounted to each AC unit. Verify that the switches are being provided as such. If they are not, the contractor shall supply & install a separate disconnect switch & mount to each AC unit. The disconnect switch shall be fused as recommended by manufacturer for proper protection.

17. The light fixtures on the building are they all type C?

Answer: The lighting fixtures are all type C.

18. Conduit #200 shows 2x3” conduits, conduits #300 shows 2 x 3 ½” conduits.

Which size of conduit do we need to use for the pump feeders?

Conduits 201 and 301 show really large and multiple conduits for controls, is this correct?

Conduits 202 and 302 show 1 ½" conduits for the pump cable is this correct?

Answer: Use 2x3 ½ " conduits as noted for conduit 300. Yes, conduits 201 and 301 are correct. Use 2 ½" conduits in lieu of 1 ½" conduits for conduits 202 and 302.

19. Note 11 mentions a utility basement, where is this?

Note 12 Says to route conduit to the street, where on the street would this be. We need a length at a minimum to estimate the work.

Answer: Note 11 is a typo. There is no utility basement. Note 12 states that the contractor shall coordinate with utility & city engineering for exact connection location(s) of phone tie-ins. Assume a length of 500'.

20. Note 3 on drawing E-08 states to use PVC coated rigid steel, the specs call for Aluminum conduit. Which conduit is correct?

Answer: Use PVC coated rigid steel conduit.

21. As requested at the pre-bid meeting, here is the specs for the Lonestar building.

Answer: A precast alternative such as the Lonestar building will not be considered at this time. A precast building may be submitted again at the time of construction and it may or may not be considered for approval at that time. Contractor must bid the project as currently shown in the published bid documents.

22. Disconnect Switches – shows (2) 1000A w/LSIG Not aware of conventional switches that can provide those functions. Advise if enclosed breakers are the intent, which would not have fuses?
Answer: While they are "called out" as disconnect switches, the circuit breaker symbol on drawing E-02 shows they are to be intended as enclosed breakers with LSIG.

MTS - shows as service entrance rated. Is this required, as the rating is on the upstream disconnect?

Answer: Should be non-service entrance rated.

VFDs – spec states 335FLA & load calculation shows 385FLS, which is correct?

Answer: Motor current is 385 Amps.

MDP – circuits #4 & #5 shows a CT sumbol to a boxed "T", please clarify what this "T" denotes?

Answer: The "T" designates thermostat.

MDP - a single section panel is shown, in order to accomplish this, the SPD device will have to be provided external (self-enclosed) outside of panel with 30A breaker in MDP. Please confirm.

Answer: Provide sufficient space within MDP Panel to mount SPD's integral to PNL, to minimize cable length.

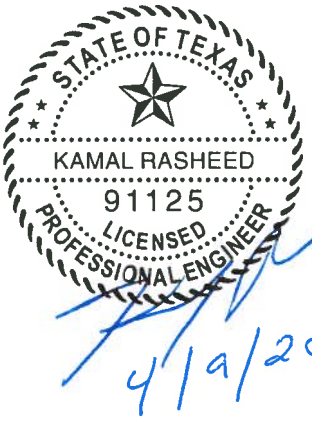
MDP - rating schedule shows main breaker w/ LSIG functions. Is ground fault required on this device, as ground fault is provided upstream?

Answer: Ground fault is not required on MDP Main Breaker as it is provided upstream of BKR.

END OF ADDENDUM NO. 1

DATED: _____

Ravi Kaleyatodi, P.E., CPM
Senior Assistant Director
Engineering Branch
Engineering and Construction Division



END OF DOCUMENT

Document 00010

TABLE OF CONTENTS

NOTE: Bold capitalized Specification Sections are included in the City of Houston Department of Public Works and Engineering Standard Construction Specifications for Wastewater Collection Systems, Water Lines, Storm Drainage, Street Paving, and Traffic located here: **http://documents.publicworks.houstontx.gov/document-center/cat_view/88-engineering-and-construction/92-specifications/208-division-02-16-standard-specifications.html**; and are incorporated in Project Manuals by reference as if copied verbatim. Documents listed "for filing" are to be provided by Bidder and are not included in this Project Manual unless indicated for example only. The Document numbers and titles hold places for actual documents to be submitted by Contractor during Bid, post-bid, or construction phase of the Project. Specification Sections marked with an asterisk (*) are amended by a supplemental specification, printed on blue paper and placed in front of the Specification it amends. Documents in the 200, 300 and 400 series of Division 00, except for Document 00410B – Bid Form, Part B, are not part of the Contract.

SPECIFICATIONS

DIVISION 1 - GENERAL REQUIREMENTS

Appendices

Doc. No.	Document Title	Doc. Date

END OF DOCUMENT

Document 00450

BIDDER'S STATEMENT OF MWBE/PDBE/DBE/SBE STATUS

This certifies that the status of the Bidder, _____, in
(Bidder's Name)
regard to the City of Houston Code of Ordinances, Chapter 15, Article V, relating to City-wide percentage goals for contracting with Minority and Women-owned Business Enterprises (MWBE) and Disadvantaged Business Enterprises (DBE), Chapter 15, Article VI, relating to City-wide percentage goals for contracting with Persons with Disabilities Business Enterprises (PDBE) and Chapter 15, Article IX, relating to City-wide percentage goals for contracting with a Small Business Enterprise (SBE) is as follows:

1. Bidder (individual, partnership, corporation) is [__] is not [__] a Minority Business Enterprise as certified by the Office of Business Opportunity.

2. Bidder (individual, partnership, corporation) is [__] is not [__] a Women-owned Business Enterprise as certified by the Office of Business Opportunity

3. Bidder (individual, partnership, corporation) does [__] does not [__] declare itself to be a Persons with Disabilities Business Enterprise as defined above.

4. Bidder (individual, partnership, corporation) does [__] does not [__] declare itself to be a Disadvantaged Business Enterprise as defined above.

5. Bidder (individual, partnership, corporation) does [__] does not [__] declare itself to be a Small Business Enterprise as defined above.

Signature: _____

Title: _____

Date: _____

END OF DOCUMENT

Document 00520

AGREEMENT

Project: FY2013 Storm Water Pump Station and Flood Warning System Improvements

Project Location: 5405 Mesa Drive Pump Station (Key Map No. 455U)

Project No: WBS No. M-430241-0009-4

The City: THE CITY OF HOUSTON, 900 Bagby Street, Houston, Texas 77002 (the "City")

and

Contractor: _____

(Address for Written Notice) _____

_____

_____

Fax Number: _____ **Phone Number:** _____

City Engineer, with respect to Sections 4.3 thru 4.5 of the General Conditions, is:

J. Timothy Lincoln, P.E. (or his successor)

P. O. Box 1562, Houston, Texas 77251-1562 (Address for Written Notice)

City Engineer, with respect to all other terms of the General Conditions, is:

Joseph T. Myers, P.E. (or his successor)

Fax Number: (832) 395-2410

THE CITY AND CONTRACTOR AGREE AS FOLLOWS:

ARTICLE 1
THE WORK OF THE CONTRACT

1.1 Contractor shall perform the Work in accordance with the Contract.

ARTICLE 2
CONTRACT TIME

2.1 Contractor shall achieve Date of Substantial Completion within **500** days after Date of Commencement of the Work, subject to adjustments of Contract Time as provided in the Contract.

2.2 The Parties recognize that time is of the essence for this Agreement and that the City will suffer financial loss if the Work is not completed within the Contract Time. Parties also recognize delays, expense, and difficulties involved in proving in a legal or arbitration proceeding actual loss suffered by the City if the Work is not completed on time. Accordingly, instead of requiring any such proof, the Parties agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay the City the amount stipulated in Document 00800 – Supplementary Conditions, for each day beyond Contract Time.

ARTICLE 3
CONTRACT PRICE

3.1 Subject to terms of the Contract, the City will pay Contractor in current funds for Contractor's performance of the Contract, Contract Price of **$**_____ which includes Alternates, if any, accepted below.

3.2 The City accepts Alternates as follows:

Alternate No. 1 None
Alternate No. 2 None
Alternate No. 3 None
Alternate No. 4 None

ARTICLE 4
PAYMENTS

4.1 The City will make progress payments to Contractor as provided below and in Conditions of the Contract.

4.2 The Period covered by each progress payment is one calendar month ending on the [X] 15th or [___] last day of the month.

4.3 The City will issue Certificates for Payment and will make progress payments on the basis of such Certificates as provided in Conditions of the Contract.

4.4 Final payment, constituting entire unpaid balance of Contract Price, will be made by the City to Contractor as provided in Conditions of the Contract.

ARTICLE 5
CONTRACTOR REPRESENTATIONS

5.1 Contractor represents:

5.1.1 Contractor has examined and carefully studied Contract documents and other related data identified in Request For or Competitive Sealed Proposals or Competitive Sealed Bids.

5.1.2 Contractor has visited the site and become familiar with and is satisfied as to general, local, and site conditions that may affect cost, progress, and performance of the Work.

5.1.3 Contractor is familiar with and is satisfied as to all federal, state, and local laws and regulations that may affect cost, progress, and performance of the Work.

5.1.4 Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified in Contract

documents and (2) reports and drawings of a hazardous environmental condition, if any, at the site which has been identified in Contract documents.

5.1.5 Contractor has obtained and carefully studied (or assumes responsibility for having done so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including applying specific means, methods, techniques, sequences, and procedures of construction, if any, expressly required by the Contract to be employed by Contractor, and safety precautions and programs incident thereto

5.1.6 Contractor does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for performance of the Work at Contract Price, within Contract Time, and in accordance with the Contract.

5.1.7 Contractor is aware of general nature of work to be performed by the City and others at the site that relates to the Work as indicated in Contract documents.

5.1.8 Contractor has correlated information known to Contractor, information and observations obtained from visits to the site, reports and drawings identified in the Contract, and all additional examinations, investigations, explorations, tests, studies, and data with the Contract.

5.1.9 Contractor has given City Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract, and written resolution thereof by City Engineer is acceptable to Contractor.

5.1.10 Contract documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

ARTICLE 6
MISCELLANEOUS PROVISIONS

6.1 The Contract may be terminated by either Party as provided in Conditions of the Contract.

6.2 The Work may be suspended by the City as provided in Conditions of the Contract.

ARTICLE 7
ENUMERATION OF CONTRACT DOCUMENTS

7.1 The following documents are incorporated into this Agreement:

7.1.1 Document 00700 - General Conditions.

7.1.2 Document 00800 - Supplementary Conditions.

7.1.3 Division 01 - General Requirements.

7.1.4 Divisions 02 through 16 of Specifications.

7.1.5 Drawings listed in Document 00015 - List of Drawings. Drawing No. _____and bound separately.

7.1.6 Addenda which apply to the Contract, are as follows:

Addendum No. 1, dated 4/9/2015

Addendum No. 2, dated _____

Addendum No. 3, dated _____

Rider No. [___], dated _____

7.1.7 Other documents:

	Document No.	Title
[X]	00410B	Bid Form – Part B
[X]	00470	Standard Pre-Bid Participation Plan Document
[ ]	00471	Pre-Bid Good Faith Efforts Report
[ ]	00472	Goal Deviation Request
[ ]	00500	Form of Business
[X]	00501	Resolution of Contractor (if a corporation)
[ ]	00570	Amended S/MWBE Participation Plan
[ ]	00571	Contractor's Good Faith Efforts Report
[ ]	00572	Plan Deviation Request
[ ]	00608	Contractor's Certification Regarding Non-Segregated Facilities for Project Funded by AIP Grant
[X]	00610	Performance Bond
[X]	00611	Statutory Payment Bond
[X]	00612	One-year Maintenance Bond
[X]	00613	One-year Surface Correction Bond
[X]	00620	Affidavit of Insurance (with the Certificate of Insurance attached)
[ ]	00623	Contractor's Act of Assurance (SRF Form ED-103)
[X]	00624	Affidavit of Compliance with Affirmative Action Program
[ ]	00628	Affidavit of Compliance with Disadvantaged Business Enterprise (DBE) Program for Project Funded By AIP Grant
[X]	00630	(POP-2) Certification of Compliance with Pay or Play Program
[X]	00631	(POP-3) City of Houston Pay or Play Program – List of Subcontractors
[X]	00800	Supplementary Conditions for Project CIP or AIP Funded
[ ]	00801	Supplementary Conditions for Project AIP Funded
[ ]	00802	SRF Supplementary Conditions
[X]	00805	Equal Employment Opportunity Program Requirements
[ ]	00806	EPA DBE and Wage Rate Requirements (SRF only)
[ ]	00807	Bidder/Contractor Requirements for DBE Program
[X]	00808	Minority and Women-owned Business Enterprise (MWBE) & Persons with Disabilities Business Enterprise (PDBE) Program
[ ]	00810	Federal Wage Rate - Highway
[ ]	00811	Federal Wage Rate - Building
[ ]	00812	Federal Wage Rate - Heavy
[X]	00820	Wage Rate for Engineering Construction
[X]	00821	Wage Rate for Building Construction
[ ]	00830	Trench Safety Geotechnical Information
[X]	00840	Pay or Play Program
[ ]	00912	Rider

ARTICLE 8
SIGNATURES

8.1 This Agreement is executed in two original copies and is effective as of the date of countersignature by City Controller.

CONTRACTOR:

By: _____
Name: _____
Title: _____
Date: _____
Tax Identification Number: _____

(If Joint Venture)

By: _____
Name: _____
Title: _____
Date: _____
Tax Identification Number: _____

CITY OF HOUSTON, TEXAS

APPROVED:

By: _____
Director,
Department of Public Works and Engineering

SIGNED:

By: _____
Mayor

COUNTERSIGNED:

By: _____
City Controller

Date Countersigned:

ATTEST/SEAL:

By: _____
City Secretary

8.2 This Contract and Ordinance have been reviewed as to form by the undersigned legal assistant and have been found to meet established Legal Department criteria. Legal Department has not reviewed the content of these documents.

_____ _____
Legal Assistant Date

END OF DOCUMENT

Document 00604

HISTORY OF OSHA ACTIONS AND LIST OF ON-THE-JOB INJURIES

Prior to award of the Contract, Low Bidder will be required to file the following with the City:

1. A history of all OSHA actions, advisories, etc., Contractor has received on all jobs worked in any capacity, prime or subcontractor. The history shall be for the two-year period preceding the Bid Date of the Project.

2. A list of all on-the-job injuries, accidents, and fatalities suffered by any present or former employees of Contractor during the same two-year period.

3. If less than the two-year period, give the date Contractor started doing business.

This information must be submitted to the City within the time period stated in Document 00498 - Notice of Intent to Award. An officer of the company must certify in a notarized statement that the information submitted is true and correct.

END OF DOCUMENT

Section 01110

SUMMARY OF WORK

PART 1G E N E R A L

1.01 SECTION INCLUDES

A. Summary of the Work including work by the City, City-furnished Products, work sequence, future work, Contractor use of Premises, special conditions for substantial completion and City occupancy.

1.02 WORK COVERED BY CONTRACT DOCUMENTS

A. Work of the Contract is for the rehabilitation of existing stormwater pump station at 5405 Mesa Drive

1. Work on the 5405 Mesa Drive Pumping Station includes, but is not limited to, demolition of the existing controls, pavement, fencing, generators, control building, portions of the well, discharge vault, and removal of the pump station's mechanical components which includes but is not limited to the piping, pumps, ladders, landings, trash rack, and all associated hardware, and the removal of the existing asphalt access road & guardrail where shown on drawings and pavement which is inside the City's ROW. The construction work consists of, but is not limited to, procurement of materials for and installation of the following: concrete pavement access road inside the City's ROW, concrete site paving, guardrail, fencing, variable frequency drives (VFD), new controls, new control building, an emergency quick connect, portions of the well, piping, submersible pumps, hatches, ladders, landings, trash rack, and all associated hardware including preparation of Operations & Maintenance manuals and training requirements. Dispose of all items to be demolished, including any components with asbestos and lead-containing paint identified in the Asbestos and Lead Inspection Report per the recommendations of the Asbestos and Lead Survey. Contractor shall coordinate with the gas company, CenterPoint Energy, to cap the existing service line and abandon in place. A copy of the executed terms and conditions (T&C) between the City of Houston and CenterPoint Energy will be obtained by the contractor.

2. Contractor is to fix failed portions of the road by preparing the surface and filling with cement stabilized sand as shown and stated in the contract drawings.

3. As shown and noted in the construction drawings, Contractor may temporarily move the concrete traffic barriers in the right-of-way as needed. Contractor shall fix any damaged barriers caused by construction. The cost of moving the barriers, fixing any damaged barrier, or replacement with new barriers, as needed, is incidental to the cost of the paving. Any new or fixed barrier must be to TxDOT standard.

4. The City of Houston will retain salvage rights to all material and equipment. All materials and equipment retained by the City of Houston shall be delivered to a point designated by City of Houston representative. (Mr. Arturo Carillo 832 395-3558). Any material or

equipment not retained by the City of Houston shall be removed from the site and disposed of by the contractor in accordance with applicable regulations.

5. The Contractor shall not enter any location, perform any work, or locate any piece of equipment within the railroad right-of-way or on the adjacent private property. The Contractor shall report any accidents, injuries, track defects, or any unusual track conditions, which may affect the safe and efficient operation of the railroad, to the Engineer and railroad company by the first available means of communication. The Contract shall not drive or place any heavy equipment on the existing 12' x 6' box culvert.

6. All items of bypass pumping machinery and electrical equipment shall be furnished by the Contractor. Contractor shall ensure at no extra cost that underpass flooding shall not occur for up to a 2-year storm event (27,500 gpm peak flow) during construction by means of bypass pumping and or station operation. Provide bypass pumping capacity to handle a 2-year flood event. The bypass pumping capacity shall be at least 27,500 gpm for water to be pumped from elevation 2.75 to 38.50.

7. The modification of the automatic pumping stations shall be complete in every detail and all work. Materials, equipment and/or services not expressly called for in these specifications or not shown in the plans, which may be necessary for the complete and proper functioning of the pumping station, including compliance with all OSHA (Occupational Safety and Health Administration) and NEC requirements and regulations, shall be performed, furnished and installed. In the preparation of this bid, the Contractor shall take full account of the provisions stated above and any necessary alterations of the specified installation shall be taken into consideration. No allowance will be made for claims for additional compensation due to compliance with these provisions.

8. Reference to any manufacturer's name, make, or model number for any item of equipment or material necessary to meet the requirements of the plans and specification is intended to indicate the characteristics of that equipment or materials which will be acceptable, so that the equivalence of the item or items may be ascertained for approval according to the submittal procedures.

9. The contractor shall facilitate installation of WiMAX radio, camera, and emergency power supply by a third party contractor equipment to make it suitable for transmitting monitoring information via antennas to be mounted on site.

10. The contractor is responsible for temporary power during construction until project completion and handover to the City. Power consumption information is not available.

11. Contractor is required to use hand excavation for foundation of Control building. Contractor is required to use hand held jack hammer to demolish part of existing box culvert and sump wall where shown on the drawings. Contractor is required to use compact/small excavator (1 ton weight class Bobcat 418 series T-4 or Kubota Tractor Corporation K008-3 or equal) for any excavation for existing sump well, vault or box culvert

other than listed above. It is contractor's mean and methods to ensure that excavation and construction activities do not damage the retaining wall or rail road.

12. Contractor to field verify connection at new vault to existing vault. Actual condition may defer. Details provided on drawings are based on visual inspection and contractor may require altering the connection shown based on field condition. Contractor to field design connection and submit to EOR for pre-approval prior to construction.

13. Contractor is responsible for providing water for the pump testing.

1.03 CASH ALLOWANCES

A. Include the following specific Cash Allowances in Contract Price under provision of General Conditions Paragraph 3.11:

1. Utility Reimbursement: $25,000
2. Lead and Asbestos Abatement: $50,000
3. Permits: $20,000

1.04 ALTERNATES

A. From the following list of Alternates, amount included in Contract Price for only those Alternates accepted by the City and listed in the fully executed Document 00520 – Agreement, Paragraph 3.2:

1. A precast alternative such as the Lonestar building will not be considered at this time. A precast building may be submitted again at the time of construction and it may or may not be considered for approval at that time. Contractor must bid the project as currently shown in the published bid documents.

1.05 CITY-FURNISHED PRODUCTS

A. Items Furnished by the City for Installation and final connection by Contractor: Water meter.

B. Contractor's Responsibilities:

1. Arrange and pay for Product delivery to the site.

2. Receive and unload Products at the site; jointly with the City, inspect for completeness or damage.

3. Handle, store, Install, and finish Products.

4. Repair or replace damaged items.

1.06 WORK SEQUENCE

A. Work on the access road shall be performed last.

B. Work shall comply with all railroad requirements.

C. Conduct all construction within limits of railroad tract right-of-ways in accordance with Union Pacific Railroad Company (UPRR) guideline and specifications.

D. Coordination of the Work: Refer to Section 01312 - Coordination and Meetings.

1.07 CONTRACTOR USE OF PREMISES

A. Comply with procedures for access to the site and Contractor's use of rights-of-way as specified in Section 01145 - Use of Premises.

B. Construction Operations: Limited to the City's rights-of-way provided by the City and areas shown or described in the Contract documents.

C. Utility Outages and Shutdown: Provide a minimum of 48 hours notice to the City and private utility companies (when applicable), excluding weekends and holidays, in advance of required utility shutdown. Coordinate all work as required.

1.08 STREET CUT ORDINANCE

A. Excavations on or under pavement in the City’s right-of-way must have a permit. Comply with City of Houston, Texas Ordinance No. 2000-1115, an ordinance amending Chapter 40 of the Code of Ordinances, Houston, Texas, relating to excavating in the Public right-of-way.

B. Comply with the latest edition of street cut New Pavement Repair and Pavement Replacement details.

C. Quantities are included for street cut pavement repair and replacement in applicable Specification sections for Unit Price contracts.

D. Include payment for street cut pavement repair and replacement in lump sum bid for Stipulated Price contracts.

1.09 WARRANTY

A. Comply with warranty requirements in accordance with Document 00700 - General Conditions.

1.10 ADDITIONAL CONDITIONS FOR SUBSTANTIAL COMPLETION

A. In addition to requirements outlined in Document 00700 – General Conditions, for Contractor to be substantially complete with the Work and call for inspection by Project Manager to confirm, the following conditions must be met or completed:

1. Demonstrate the ability to receive and monitor video and Supervisory Control and Data Acquisition (SCADA) data from all remote sites (ground water plants, pressure points, fire stations, etc).

2. Demonstrate WiMAX transmit and receive capability per City of Houston requirements.

3. All testing shall be completed and accepted by Project Manager.

4. All SCADA and security equipment shall be installed, accepted by manufacturer's representative and approved for operation.

5. Draft O&M manuals shall be delivered to Project Manager.

6. Training shall be conducted, utilizing draft O&M manuals.

7. All Safety related work including pavement striping, signing and signalization

6 (b). All safety-related systems and equipment shall be installed, accepted by manufacturer's representative and approved for use.

8. *All pay items complete report.*

9. *Contractor shall contact Construction Project Manager to complete Texas Department of Licensing and Regulation Post Construction Inspection of pedestrian elements for Texas Accessibility Standards.*

B. No additional condition described in Paragraph 1.10 may be included in Contractor's punch list.

PART 2 P R O D U C T S - Not Used

PART 3 E X E C U T I O N - Not Used

END OF SECTION

Section 16441

SWITCHBOARDS

PART 1 G E N E R A L

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes service and distribution switchboards rated 600 V and less.

1.03 DEFINITIONS

A. EMI: Electromagnetic interference.

B. RFI: Radio-frequency interference.

C. RMS: Root mean square.

D. SPDT: Single pole, double throw.

1.04 SUBMITTALS

A. Product Data: For each type of switchboard, overcurrent protective device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.

B. Shop Drawings: For each switchboard and related equipment.

1. Dimensioned plans, elevations, sections, and details, including required clearances and service space around equipment. Show tabulations of installed devices, equipment features, and ratings. Include the following:

a. Enclosure types and details for types other than NEMA 250, Type 1.

b. Bus configuration, current, and voltage ratings.
c. Short-circuit current rating of switchboards and overcurrent protective devices.

d. Descriptive documentation of optional barriers specified for electrical insulation and isolation.

e. Utility company's metering provisions with indication of approval by utility company.

f. Mimic-bus diagram.

g. Features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.

2. Wiring Diagrams: Power, signal, and control wiring.

C. Qualification Data: For testing agency.

D. Field quality-control test reports including the following:

1. Test procedures used.

2. Test results that comply with requirements.

3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

E. Operation and Maintenance Data: For switchboards and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 1 Section "Closeout Procedures, Operation and Maintenance Data," include the following:

1. Routine maintenance requirements for switchboards and all installed components.

2. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.

3. Time-current curves, including selectable ranges for each type of overcurrent protective device.

1.05 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.

1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.

B. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7.

C. Source Limitations: Obtain switchboards through one source from a single manufacturer.

D. Product Selection for Restricted Space: Drawings indicate maximum dimensions for switchboards including clearances between switchboards and adjacent surfaces and other items. Comply with indicated maximum dimensions.

E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

F. Comply with NEMA PB 2, "Deadfront Distribution Switchboards."

G. Comply with NFPA 70.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver in sections or lengths that can be moved past obstructions in delivery path.

B. Store indoors in clean dry space with uniform temperature to prevent condensation. Protect from exposure to dirt, fumes, water, corrosive substances, and physical damage.

C. Handle switchboards according to NEMA PB 2.1 and NECA 400.

1.07 PROJECT CONDITIONS

A. Installation Pathway: Remove and replace access fencing, doors, lift-out

panels, and structures to provide pathway for moving switchboards into place.

B. Environmental Limitations: Rate equipment for continuous operation under the following conditions, unless otherwise indicated:

1. Ambient Temperature: Not exceeding 104 deg F (40 deg C).

2. Altitude: Not exceeding 6600 feet (2000 m).

C. Service Conditions: NEMA PB 2, usual service conditions, as follows:

1. Ambient temperatures within limits specified.

2. Altitude not exceeding 6600 feet (2000 m).

3. Notify Construction Manager no fewer than seven days in advance of proposed interruption of electric service.

4. Indicate method of providing temporary electric service.

5. Do not proceed with interruption of electric service without Construction Manager's written permission.

1.08 COORDINATION

A. Coordinate layout and installation of switchboards and components with other construction including conduit, piping, equipment, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

B. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 3.

1.09 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Potential Transformer Fuses: Equal to 10 percent of amount installed for each size and type, but no fewer than 2 of each size and type.

2. Control-Power Fuses: Equal to 10 percent of amount installed for each size and type, but no fewer than 2 of each size and type.

3. Fuses and Fusible Devices for Fused Circuit Breakers: Equal to 10 percent of amount installed for each size and type, but no fewer than 3 of each size and type.

4. Fuses for Fused Switches: Equal to 10 percent of amount installed for each size and type, but no fewer than 3 of each size and type.

5. Fuses for Fused Power-Circuit Devices: Equal to 10 percent of amount installed for each size and type, but no fewer than 3 of each size and type.

6. Indicating Lights: Equal to 10 percent of amount installed for each size and type, but no fewer than 1 of each size and type.

PART 2

2.01 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.02 MANUFACTURED UNITS

A. Available Manufacturers:

1. Eaton Corporation; Cutler-Hammer Products.

2. General Electric Co.; Electrical Distribution & Protection Div.

3. Siemens Energy & Automation, Inc.

4. Square D

B. Front-Connected, Front-Accessible Switchboard: Fixed, individually mounted main device, panel-mounted branches, and sections rear aligned.

C. Not used

D. Not used

1. Main Devices: Fixed mounted.

2. Branch Devices: Fixed mounted.

E. Nominal System Voltage: 480Y/277 V.

F. Main-Bus Continuous: 1000 A.

G. Fabricate and test switchboards according to IEEE 344 to withstand seismic forces defined in Division 16 Section "Electrical Supports and Seismic Restraints."

H. Enclosure: Steel, NEMA 250, Type 1.

I. Enclosure Finish for Outdoor Units: Factory-applied finish in manufacturer's standard color, undersurfaces treated with corrosion-resistant undercoating.

J. Enclosure Finish for Indoor Units: Factory-applied finish in manufacturer's standard gray finish over a rust-inhibiting primer on treated metal surface.

K. Barriers: Between adjacent switchboard sections.

L. Insulation and isolation for main bus of main section and main and vertical buses of feeder sections.

M. Space Heaters: Factory-installed electric space heaters of sufficient wattage in each vertical section to maintain enclosure temperature above expected dew point.

1. Space-Heater Control: Thermostats to maintain temperature of each section above expected dew point.

N. Bus Transition and Incoming Pull Sections: Matched and aligned with basic switchboard.

O. Removable, Hinged Rear Doors and Compartment Covers: Secured by standard bolts, for access to rear interior of switchboard.

P. Hinged Front Panels: Allow access to circuit breaker, metering, accessory, and blank compartments.

Q. Pull Box on Top of Switchboard:

1. Adequate ventilation to maintain temperature in pull box within same

limits as switchboard.

2. Set back from front to clear circuit-breaker removal mechanism.

3. Removable covers shall form top, front, and sides. Top covers at rear shall be easily removable for drilling and cutting.

4. Bottom shall be insulating, fire-resistive material with separate holes for cable drops into switchboard.

5. Cable supports shall be arranged to facilitate cabling and adequate to support cables indicated, including those for future installation.

R. Buses and Connections: Three phase, four wire, unless otherwise indicated.

1. Phase- and Neutral-Bus Material: Hard-drawn copper of 98 percent conductivity with feeder circuit-breaker line connections.

   a. Use copper for feeder circuit-breaker line connections.

2. Load Terminals: Insulated, rigidly braced, silver-plated, copper runback bus extensions equipped with pressure connectors for outgoing circuit conductors. Provide load terminals for future circuit-breaker positions at full ampere rating of circuit-breaker position.

3. Ground Bus: 1/4-by-2-inch- (6-by-50-mm-) minimum-size, hard-drawn copper of 98 percent conductivity, equipped with pressure connectors for feeder and branch-circuit ground conductors. For busway feeders, extend insulated equipment grounding cable to busway ground connection and support cable at intervals in vertical run.

4. Contact Surfaces of Buses: Silver plated.

5. Main Phase Buses, Neutral Buses, and Equipment Ground Buses: Uniform capacity for entire length of switchboard's main and distribution sections. Provide for future extensions from both ends.

6. Isolation Barrier Access Provisions: Permit checking of bus-bolt tightness.

7. Neutral Buses: 100 percent of the ampacity of phase buses, unless otherwise indicated, equipped with pressure connectors for outgoing circuit neutral cables. Bus extensions for busway feeder neutral bus are braced.

S. Future Devices: Equip compartments with mounting brackets, supports, bus connections, and appurtenances at full rating of circuit-breaker compartment.

T. Bus-Bar Insulation: Factory-applied, flame-retardant, tape wrapping of individual bus bars or flame-retardant, spray-applied insulation. Minimum insulation temperature rating: 105 deg C.

2.03 TRANSIENT VOLTAGE SUPPRESSION DEVICES

A. IEEE C62.41, integrally mounted, plug-in-style, solid-state, parallel-connected, sine-wave tracking suppression and filtering modules.

B. Minimum single-impulse current rating shall be as follows:

1. Line to Line: 250kA

2. Line to Neutral and line toGround: 125kA

3. Neutral to Ground: 50,000A.

2.04 OVERCURRENT PROTECTIVE DEVICES

A. Molded-Case Circuit Breaker: NEMA AB 3, with interrupting capacity to meet available fault currents.

1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.

2. Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.

B. Molded-Case Circuit-Breaker Features and Accessories: Standard frame sizes, trip ratings, and number of poles.

1. Lugs: Compression style, suitable for number, size, trip ratings, and conductor material.

2. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HACR for heating, air-conditioning, and refrigerating equipment.

3. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and

ground-fault indicator.

4. Control Voltage: 120V, ac.

5. Main Contact Interrupting Capability: 12 times the switch current rating, minimum.

2.05 INSTRUMENTATION

A. Instrument Transformers: NEMA EI 21.1, IEEE C57.13, and the following:

1. Current Transformers: Ratios shall be as indicated with accuracy class and burden suitable for connected relays, meters, and instruments.

2. Control-Power Transformers: Dry type, mounted in separate compartments for units larger than 3 kV.

2.06 CONTROL POWER

A. Control Circuits: 120 V, supplied through secondary disconnecting devices from control-power transformer.

B. Control Wiring: Factory installed, with bundling, lacing, and protection included. Provide flexible conductors for No. 8 AWG and smaller, for conductors across hinges, and for conductors for interconnections between shipping units.

2.07 ACCESSORY COMPONENTS AND FEATURES

A. Furnish accessory set including tools and miscellaneous items required for overcurrent protective device test, inspection, maintenance, and operation.

B. Furnish portable test set to test functions of solid-state trip devices without removal from switchboard. Include relay and meter test plugs suitable for testing switchboard meters and switchboard class relays.

C. Furnish one portable, floor-supported, roller-based, elevating carriage arranged for movement of circuit breakers in and out of compartments for present and future circuit breakers.

D. Furnish overhead circuit-breaker lifting device, mounted at top front of switchboard, with hoist and lifting yokes matching each drawout circuit breaker.

E. Spare-Fuse Cabinet: Suitably identified, wall-mounted, lockable, compartmented steel box or cabinet. Arrange for wall mounting.

F. Fungus Proofing: Permanent fungicidal treatment for switchboard interior, including instruments and instrument transformers.

2.08 IDENTIFICATION

A. Not used

PART 3 - EXECUTION

3.01 PROTECTION

A. Temporary Heating: Apply temporary heat to maintain temperature according to manufacturer's written instructions.

3.02 EXAMINATION

A. Examine elements and surfaces to receive switchboards for compliance with installation tolerances and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.03 INSTALLATION

A. Install switchboards and accessories according to NEMA PB 2.1 and NECA 40.

B. Install and anchor switchboards level on concrete bases, 4-inch (100-mm) nominal thickness. Concrete base is specified in Division 16 Section "Electrical Supports and Seismic Restraints," and concrete materials and installation requirements are specified in Division 3.

1. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch (450-mm) centers around full perimeter of base.

2. For switchboards, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.

3. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

4. Install anchor bolts to elevations required for proper attachment to switchboards.

C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from switchboard units and components.

D. Operating Instructions: Frame and mount the printed basic operating instructions for switchboards, including control and key interlocking sequences and emergency procedures. Fabricate frame of finished wood or metal and cover instructions with clear acrylic plastic. Mount on front of switchboards.

1. Set field-adjustable switches and circuit-breaker trip ranges.

3.04 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs as specified in Division 16 Section "Electrical Identification."

B. Switchboard Nameplates: Label each switchboard compartment with engraved metal or laminated-plastic nameplate mounted with corrosion-resistant screws.

3.05 FIELD QUALITY CONTROL

A. Prepare for acceptance tests as follows:

1. Test insulation resistance for each switchboard bus, component, connecting supply, feeder, and control circuit.

2. Test continuity of each circuit.

B. Testing Agency: Engage a qualified testing and inspecting agency to perform the following field tests and inspections and prepare test reports:

C. Perform the following field tests and inspections and prepare test reports:

1. Perform the following infrared scan tests and inspections and prepare reports:

a. Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each switchboard. Remove front panels so joints and connections are accessible to portable scanner.

b. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each switchboard 11 months after date of Substantial Completion.

c. Instruments, Equipment, and Reports:

1) Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.

2) Prepare a certified report that identifies switchboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.06 CLEANING

A. On completion of installation, inspect interior and exterior of switchboards. Remove paint splatters and other spots. Vacuum dirt and debris; do not use compressed air to assist in cleaning. Repair exposed surfaces to match original finish.

3.07 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain switchboards, overcurrent protective devices, instrumentation, and accessories. Refer to Division 1 Section "Demonstration and Training."

END OF SECTION